



Supplement of

Bias-correcting input variables enhances forecasting of reference crop evapotranspiration

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Tables

Table S1 Results of t-tests (*t*-statistic) for raw forecasts of input variables (columns 2 to 6)

Lead times	Tests	Test if bias in raw Tmax forecasts is different from zero (Figure S2)	Test if bias in raw Tmin forecasts is different from zero (Figure S3)	Test if bias in raw vapor pressure forecasts is different from zero (Figure S4)	Test if bias in raw solar radiation forecasts is different from zero (Figure S5)	Test if bias in raw wind speed forecasts is different from zero (Figure S6)
Day 1		-8.96**	1.66	-3.18**	11.83**	16.04**
Day 2		-8.16**	2.65**	-3.43**	11.39**	16.50**
Day 3		-8.19**	2.68**	-3.77**	11.81**	16.57**
Day 4		-8.12**	2.56**	-4.05**	12.17**	16.56**
Day 5		-7.87**	2.41**	-4.09**	12.45**	16.45**
Day 6		-7.70**	2.27**	-4.21**	11.88**	16.45**
Day 7		-7.73**	2.22**	-4.33**	10.81**	16.29**
Day 8		-7.70**	2.17**	-4.30**	11.41**	16.56**
Day 9		-7.44**	2.20**	-4.18**	11.95**	16.82**

The Spatial Degrees of Freedom (SDOF) is 50 in the tests; ** indicates statistically significant differences at the 95% confidence interval.

Table S2 Results of t-tests (*t*-statistic) for performance evaluation

Lead times	Tests	Comparison of bias in raw ETo forecasts constructed with vs. without bias correction (Figure 1)	Test if r in raw ETo forecasts constructed with raw and bias-corrected input variables are different (Figure 2)	Test if bias in calibrated ETo forecasts from Calibration 2 (Figure 3) is different from zero	Test differences in absolute bias between calibrated ETo forecasts from Calibrations 2 and 1 (Figure 4)	Test difference in <i>r</i> between observations and calibrated ETo forecasts from Calibrations 2 and 1 (Figure 6)	Comparison of CRPS skill score between raw and calibrated ETo forecasts (Figure 7)	Test difference in CRPS skill score of calibrated ETo forecasts from Calibrations 2 and 1 (Figure 8)	Test difference in α -index between Calibrations 2 and 1 (Figure S14)	Test if difference in CRPS skill scores between Calibrations 3 and 4 (Figure S17)
Day 1		-9.76**	7.26**	1.80	-4.08**	5.73**	27.59**	11.53**	-0.54	11.81**
Day 2		-9.86**	7.13**	1.91	-3.93**	4.93**	29.03**	10.86**	-1.47	10.26**
Day 3		-9.86**	7.01**	2.07**	-3.68**	4.43**	31.14**	9.77**	-1.81	9.16**
Day 4		-9.81**	7.04**	2.27**	-3.54**	4.01**	33.77**	8.58**	-1.17	8.33**
Day 5		-9.71**	7.09**	2.40**	-3.36**	3.75**	38.11**	7.16**	-2.09**	7.25**
Day 6		-9.54**	7.33**	2.60**	-3.37**	3.17**	42.59**	6.44**	-1.28	6.66**
Day 7		-9.34**	7.40**	2.76**	-3.26**	2.69**	44.38**	6.15**	-1.99	6.25**
Day 8		-9.04**	7.54**	2.98**	-3.13**	2.32**	45.57**	5.85**	-1.57	5.67**
Day 9		-9.21**	7.50**	3.13**	-2.91**	1.85	51.91**	5.05**	-1.70	4.95**

The Spatial Degrees of Freedom (SDOF) is 50 in the tests; ** indicates statistically significant differences at the 95% confidence interval.

Figures

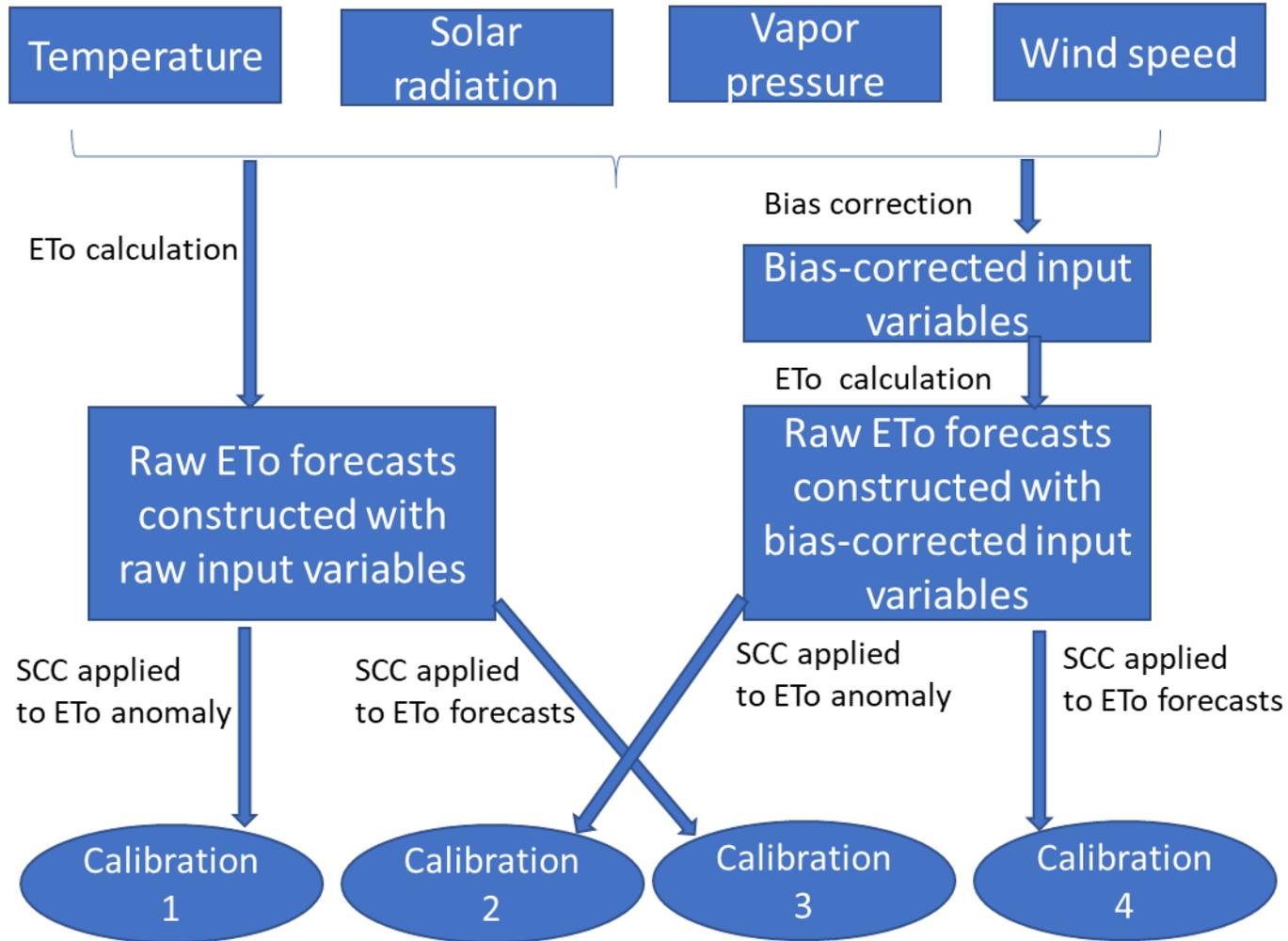


Figure S1. Schematic of the four calibrations

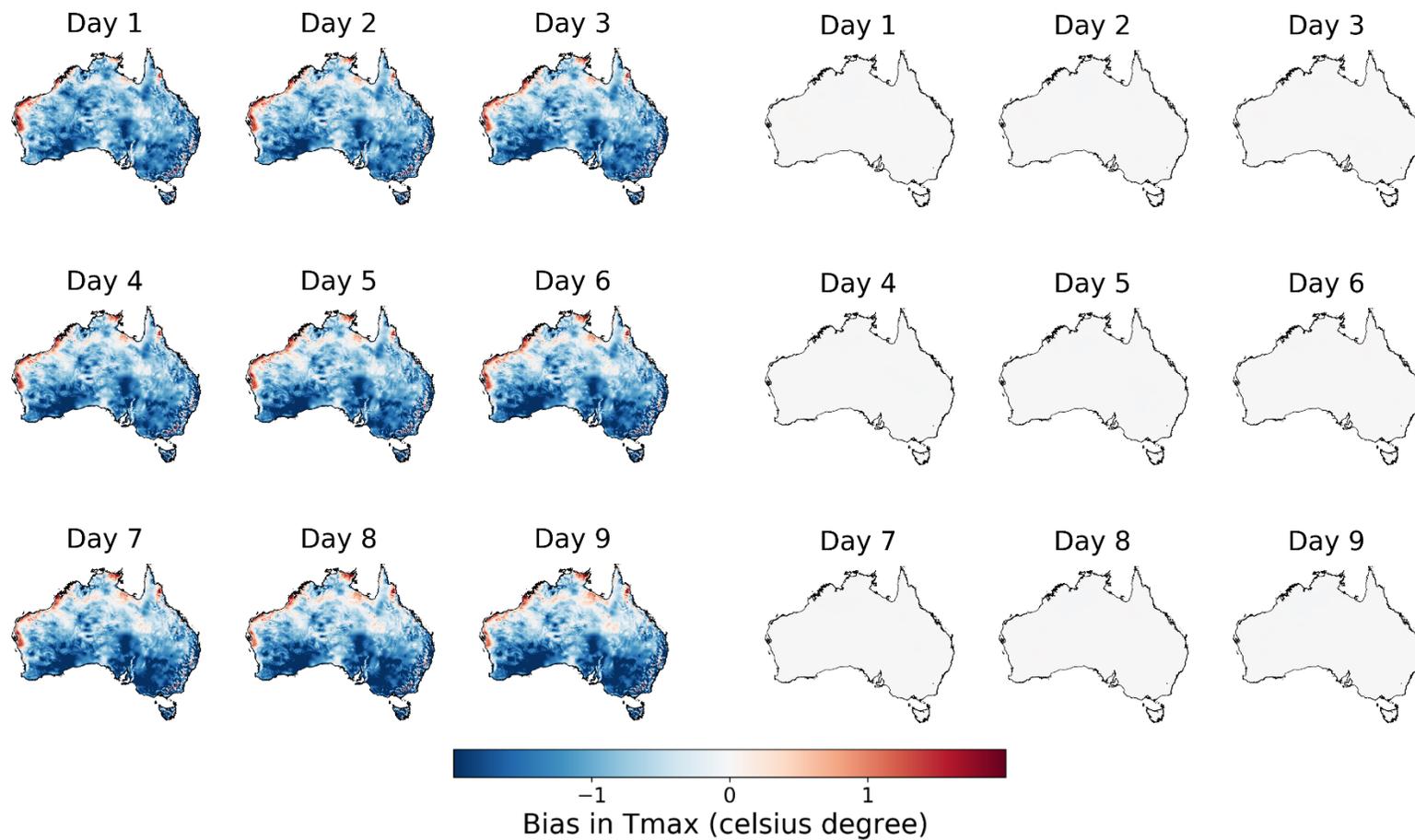


Figure S2. Bias in the (three panels on the left) raw and (three panels on the right) bias-corrected T_{max} forecasts

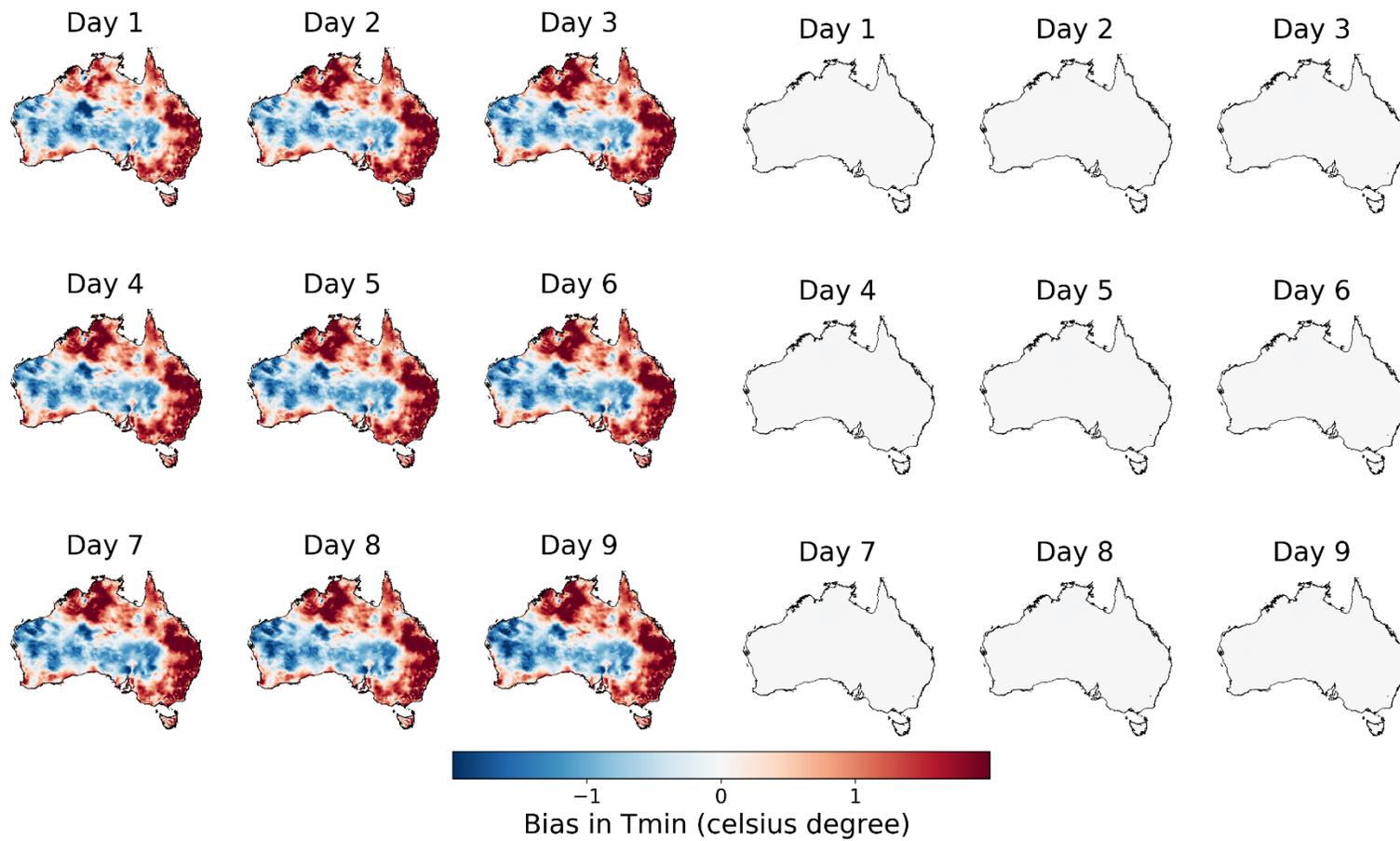


Figure S3. Bias in the (three panels on the left) raw and (three panels on the right) bias-corrected Tmin forecasts

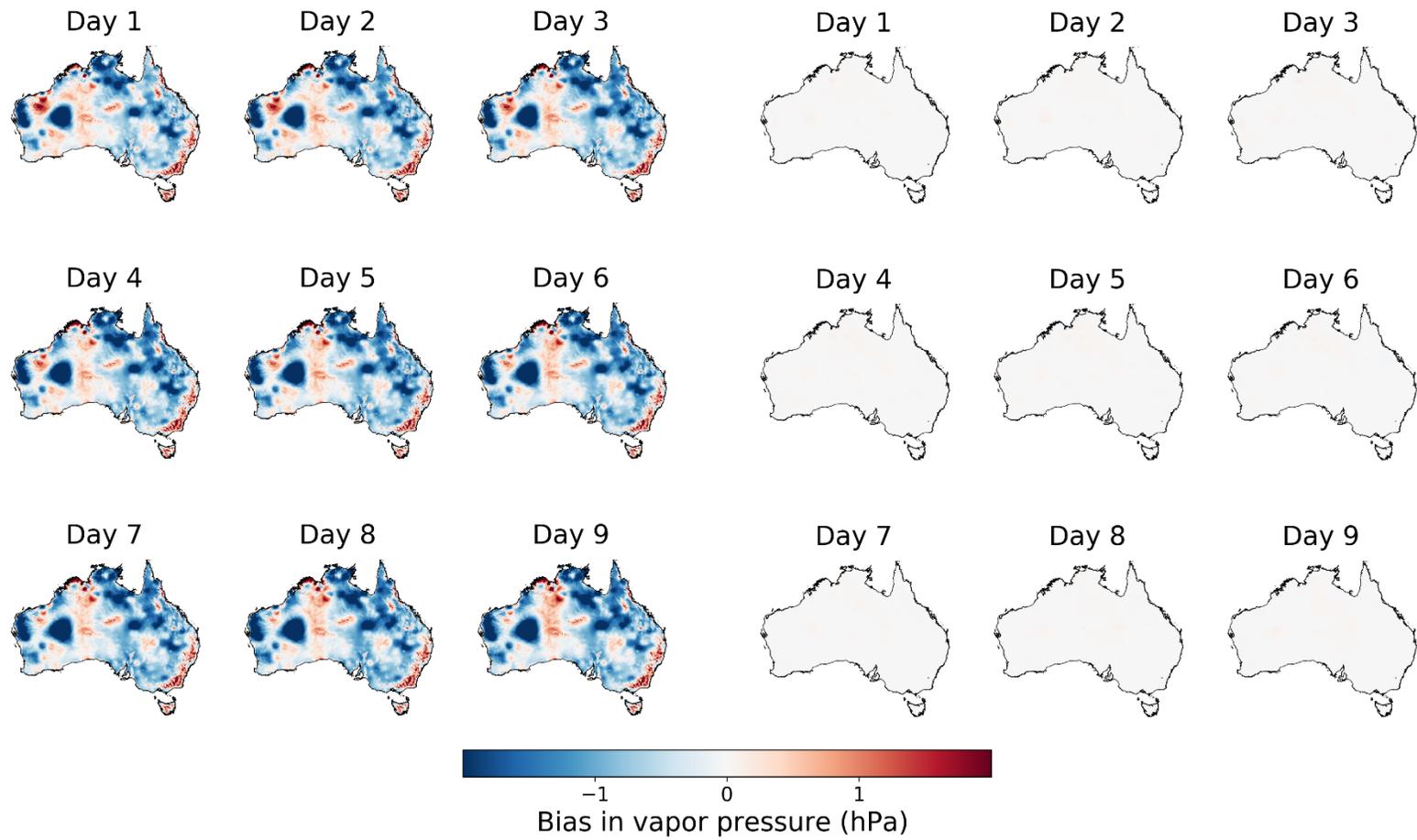


Figure S4. Bias in the (three panels on the left) raw and (three panels on the right) bias-corrected vapor pressure forecasts

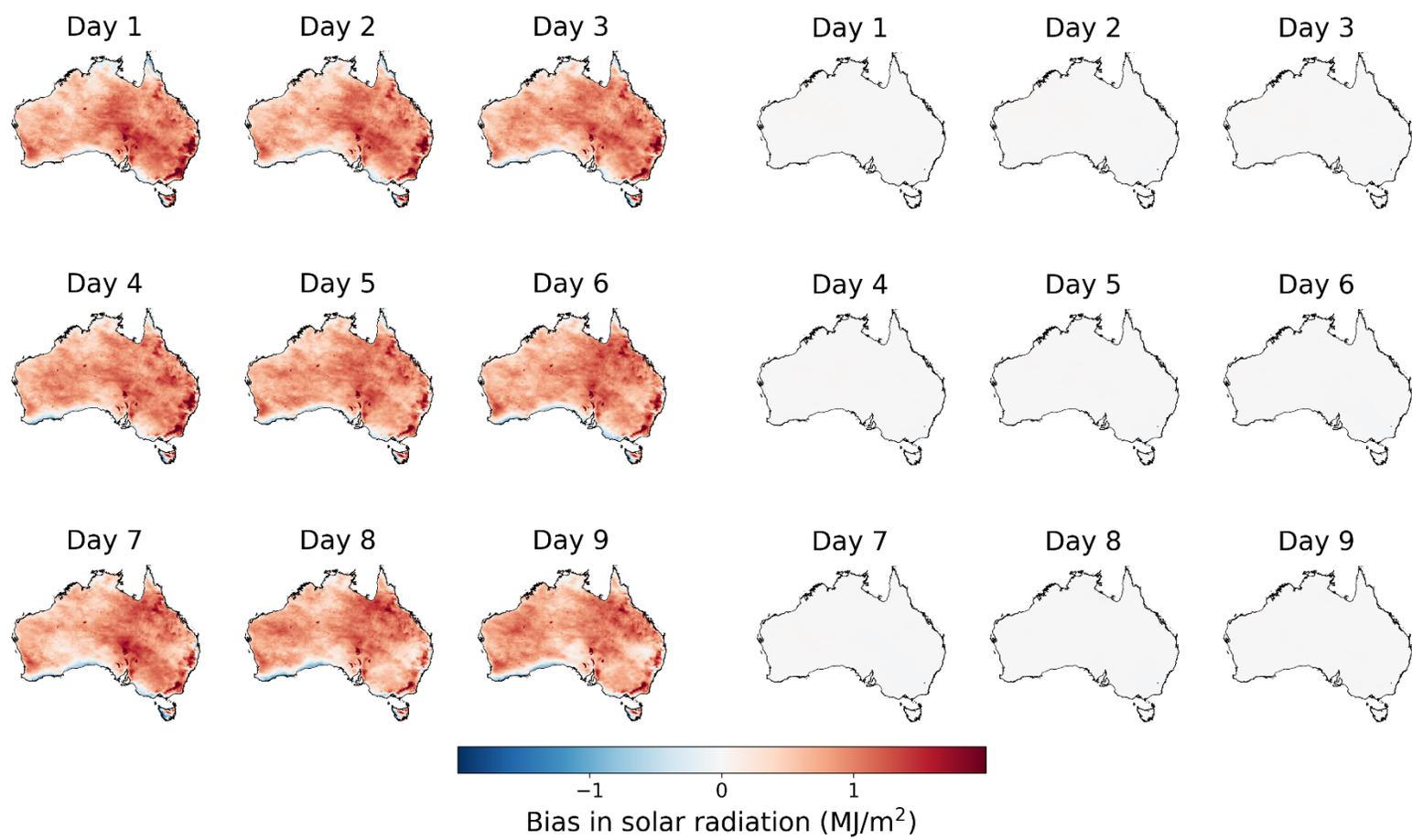


Figure S5. Bias in the (three panels on the left) raw and (three panels on the right) bias-corrected solar radiation forecasts

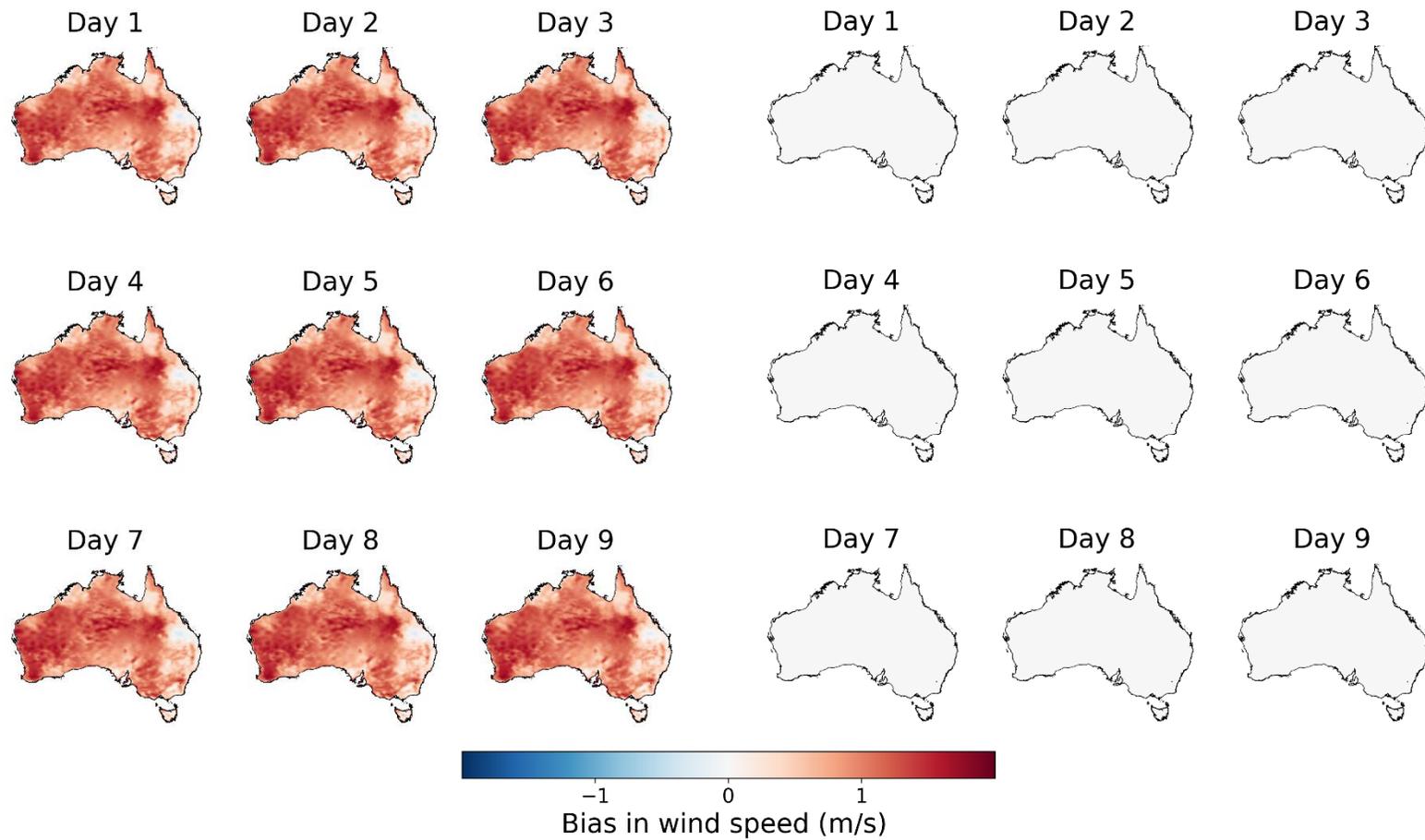


Figure S6. Bias in the (three panels on the left) raw and (three panels on the right) bias-corrected wind speed forecasts

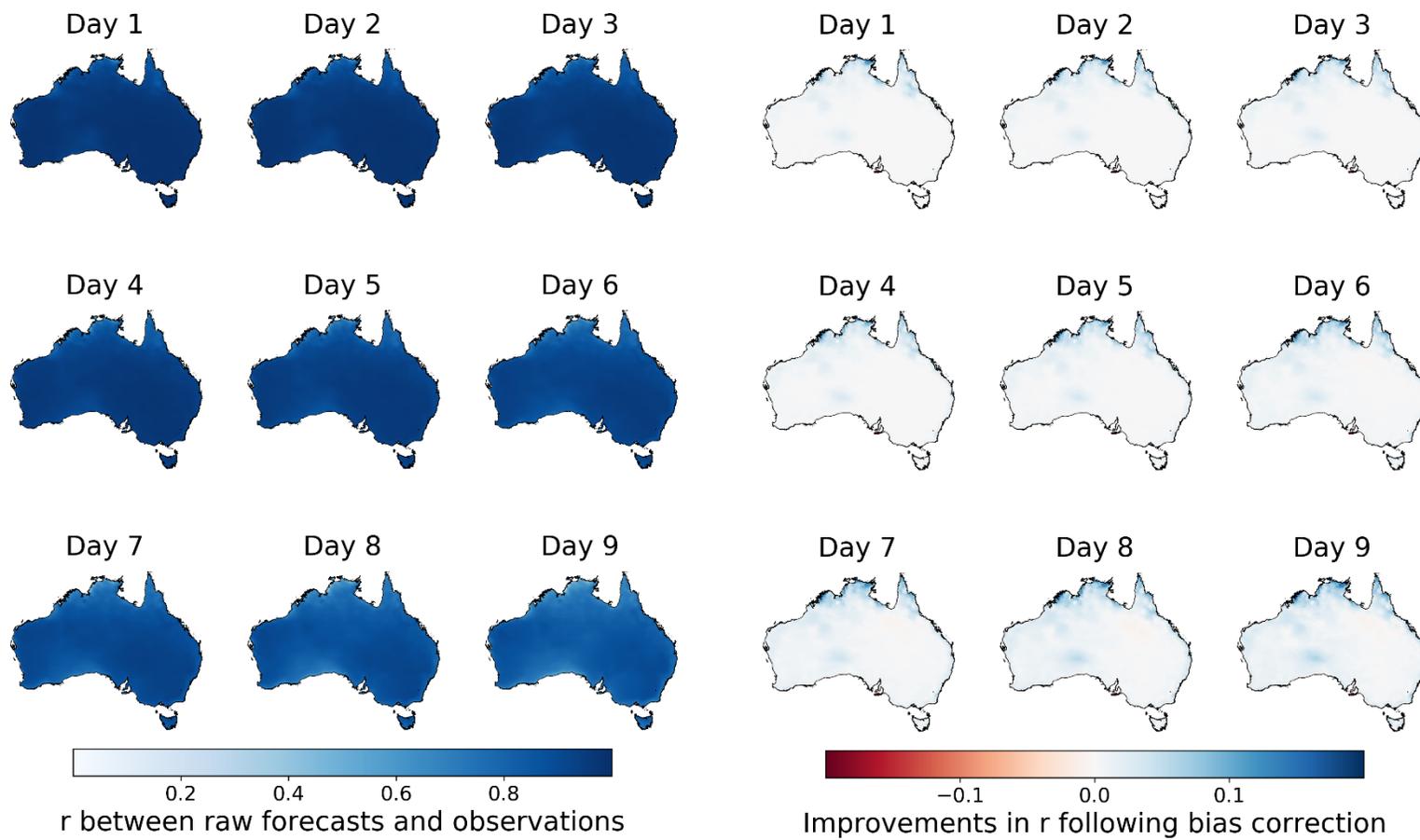


Figure S7. Correlation coefficients (r) between raw T_{max} forecasts and AWAP data (three panels on the left), and improvements in r (three panels on the right) through quantile mapping

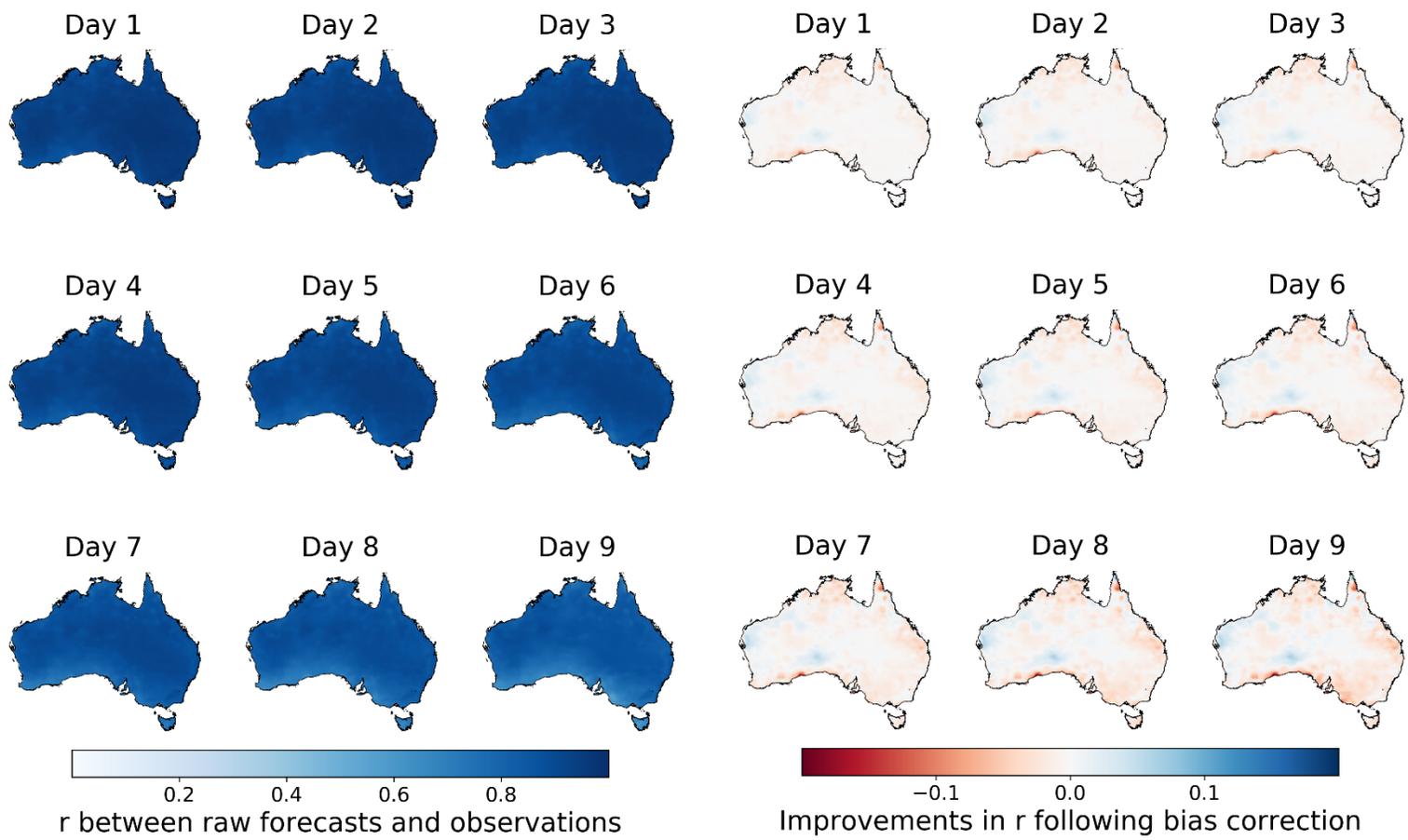


Figure S8. Correlation coefficients (r) between raw T_{min} forecasts and AWAP data (three panels on the left), and improvements in r (three panels on the right) through quantile mapping

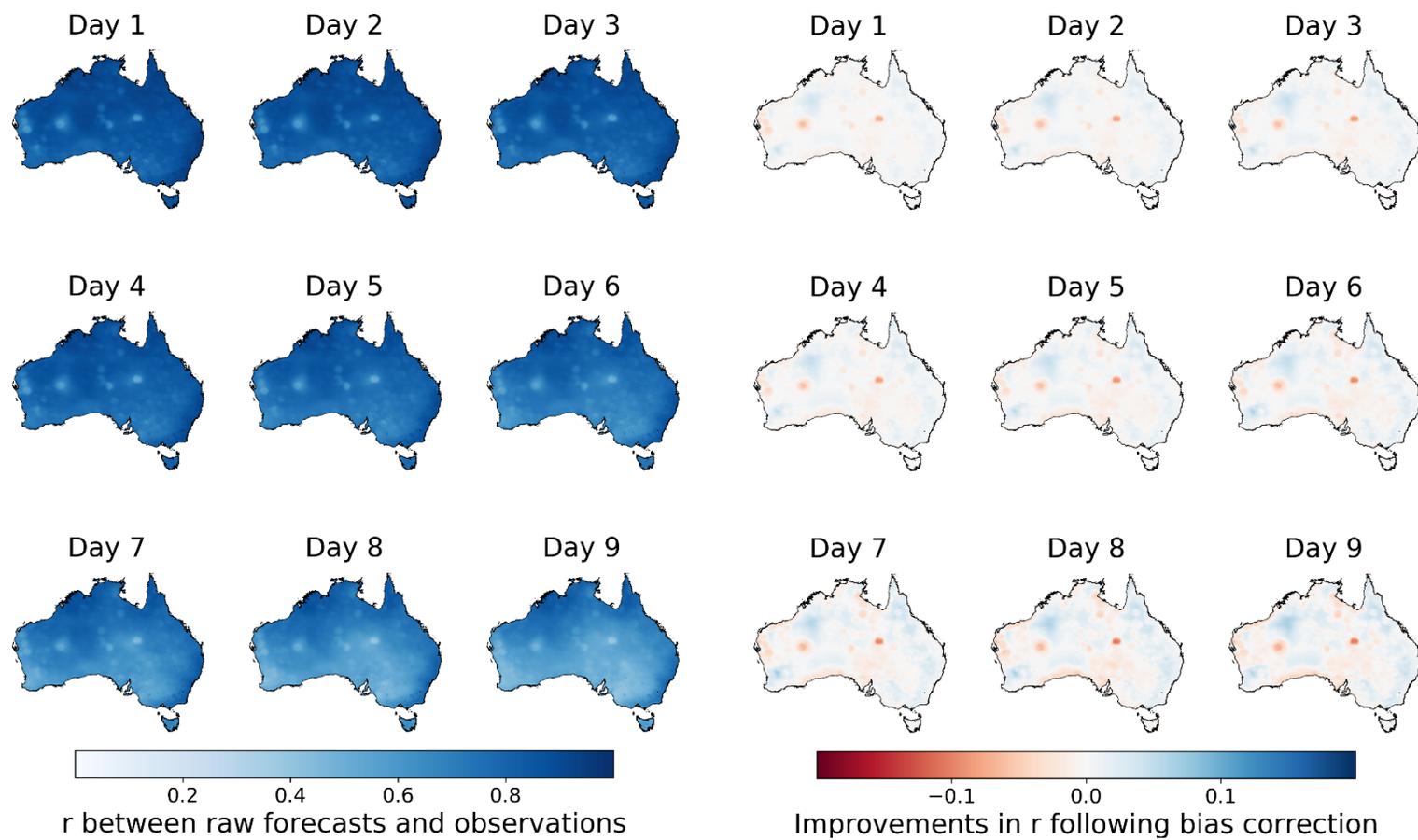


Figure S9. Correlation coefficients (r) between raw vapor pressure forecasts and AWAP data (three panels on the left), and improvements in r (three panels on the right) through quantile mapping

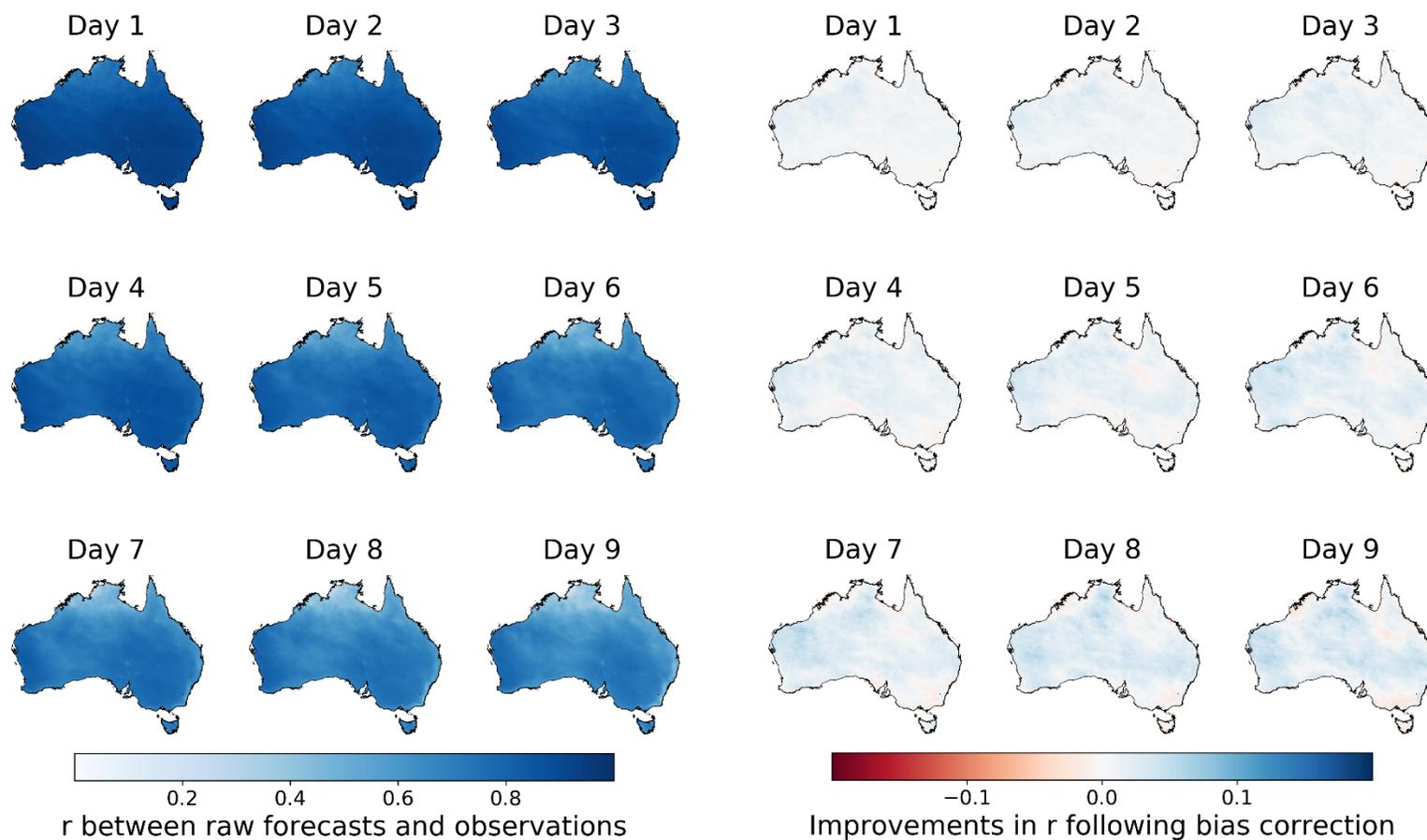


Figure S10. Correlation coefficients (r) between raw solar radiation forecasts and AWAP data (three panels on the left), and improvements in r (three panels on the right) through quantile mapping

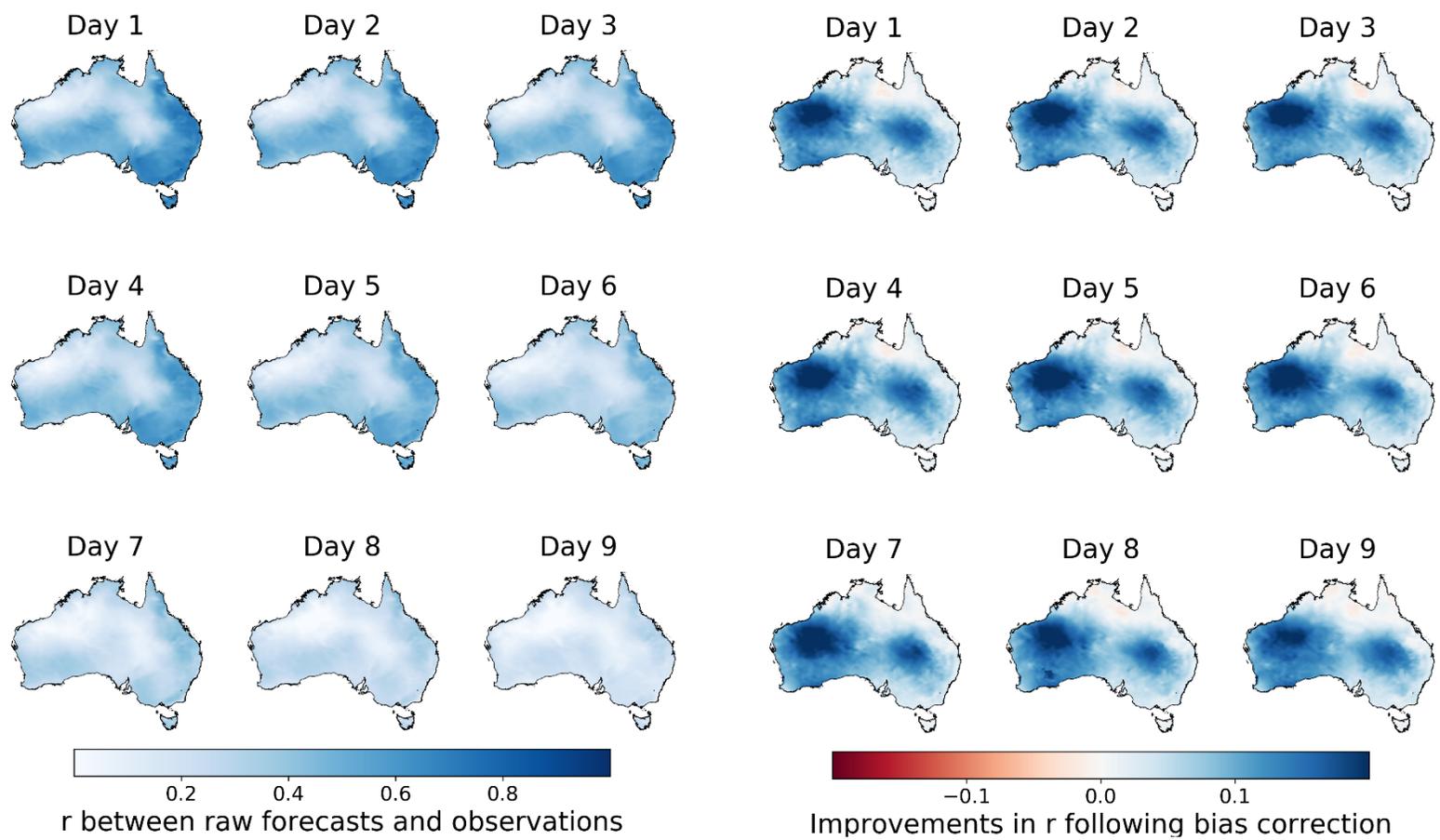


Figure S11. Correlation coefficients (r) between raw wind speed forecasts and AWAP data (three panels on the left), and improvements in r (three panels on the right) through quantile mapping

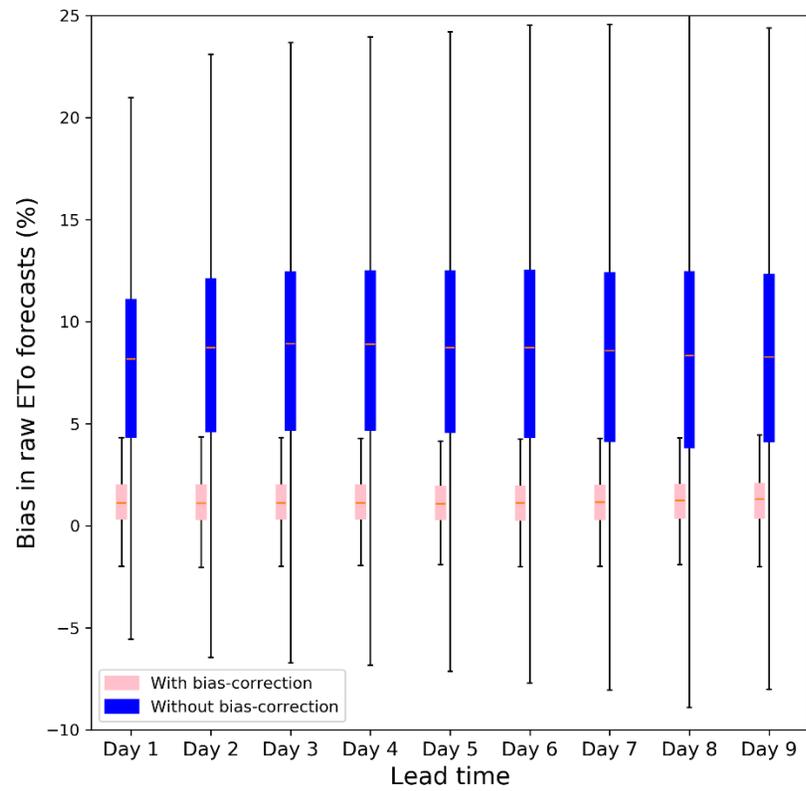


Figure S12. Boxplot of biases in raw ETo forecasts constructed raw (blue) and bias-corrected inputs (pink)

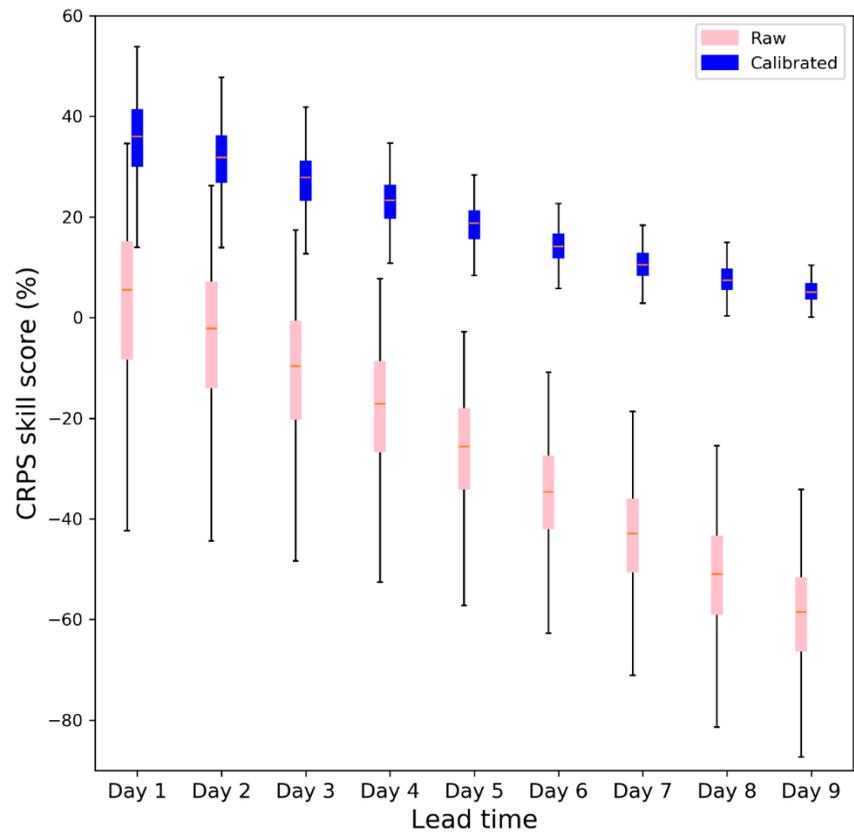


Figure S13. Boxplot of CRPS skill score in raw (pink) and calibrated ETo forecast (blue) from Calibration 2

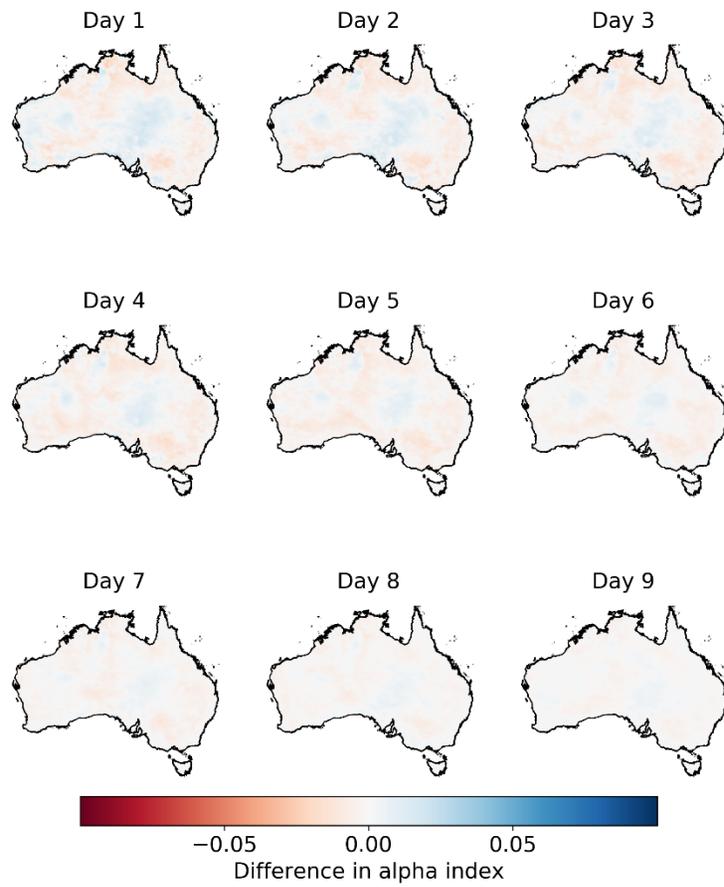


Figure S14. Differences in alpha index of calibrated forecasts between Calibration 2 and Calibration 1

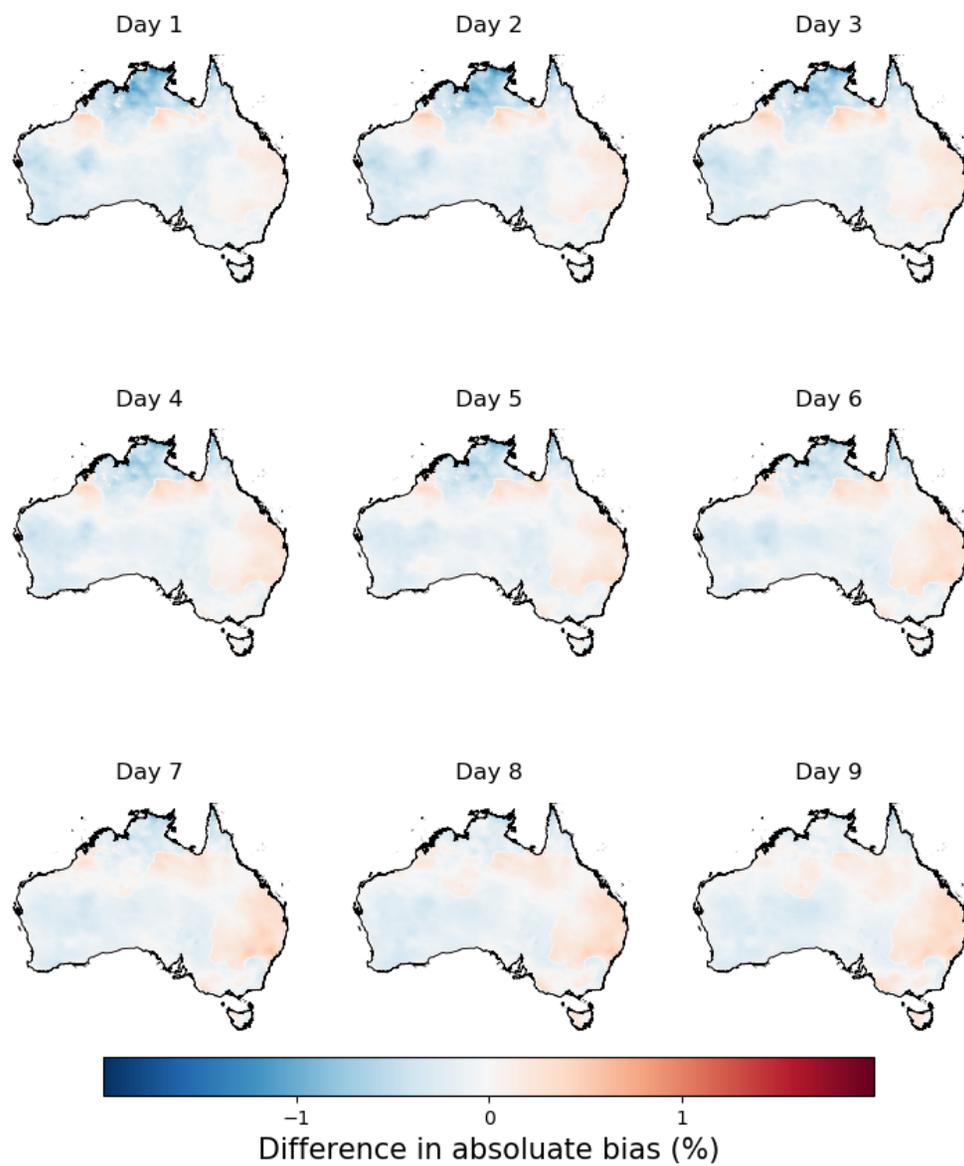


Figure S15. Differences in absolute bias between Calibrations 3 and 4

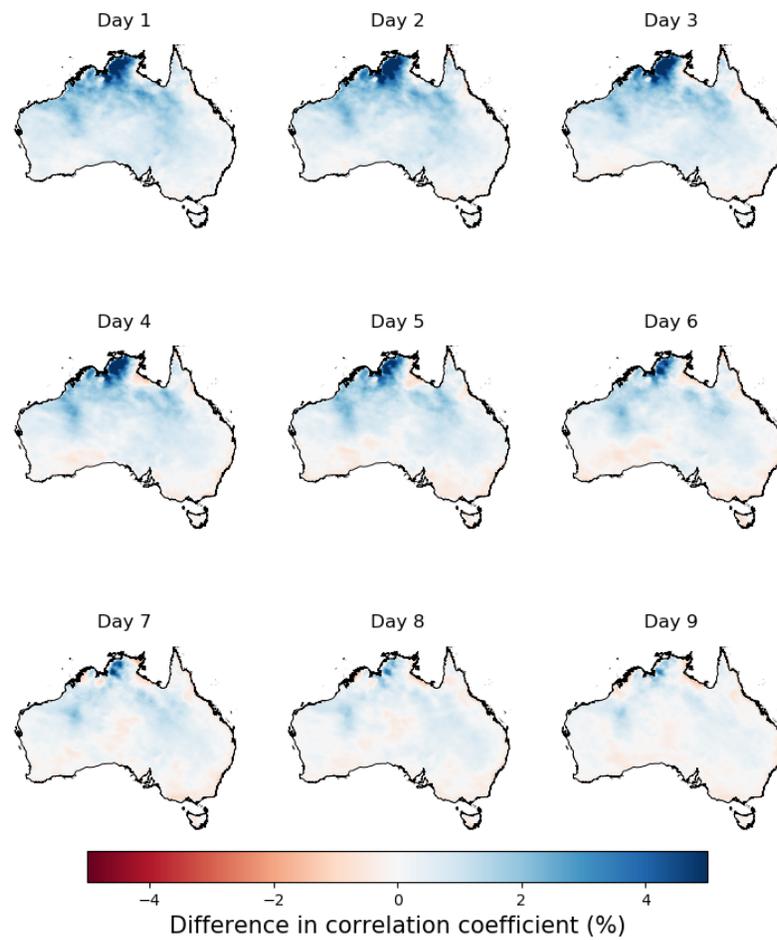


Figure S16. Differences in correlation coefficient between Calibrations 3 and 4

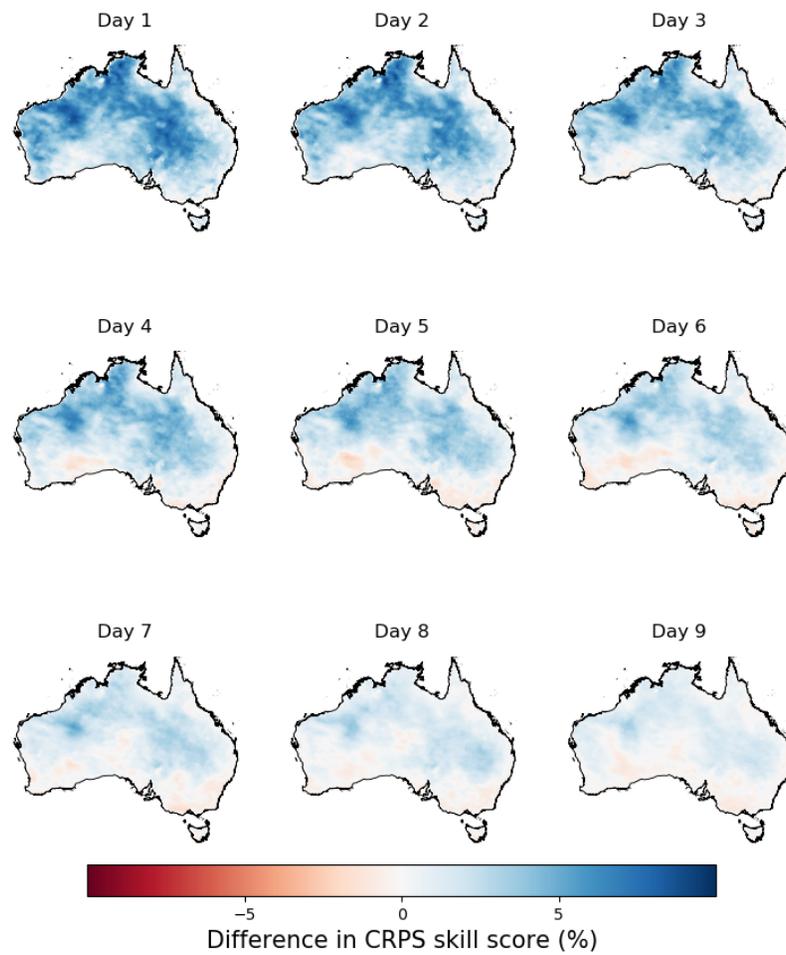


Figure S17. Differences in CRPS skill score between Calibrations 3 and 4

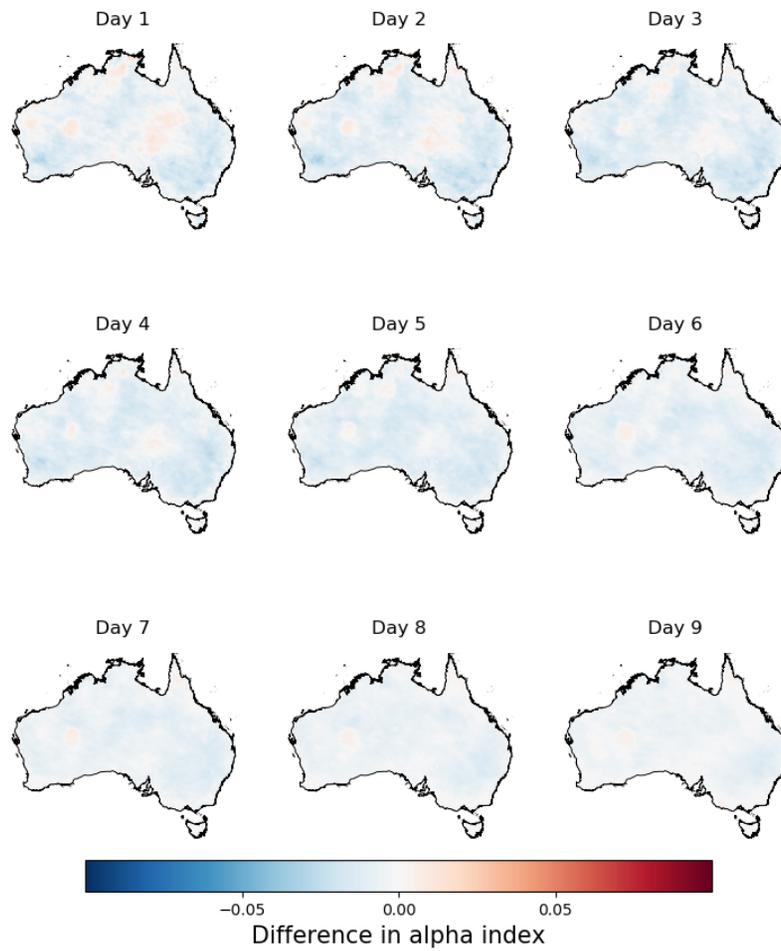


Figure S18. Differences in alpha index between Calibrations 3 and 4